

15444-343  
TELKOV, N.A., kandidat meditsinskikh nauk (Novosibirsk)

Knife wound of the heart. Vest.khir.75 no.6:114-115 J1 '55.  
(HEART--WOUNDS AND INJURIES) (MLRA 8:10)

TELKOV, N.A., kandidat meditsinskikh nauk.

Technic of closing an intestinal stump using a gastrorrhaphiatome.  
Vest. khir. 77 no.1:99-103 Ja '56 (MIRA 9:5)

1. Iz khirurgicheskogo otdeleniya (zav.-N.A. Telkov) 9-y  
Novosibirskoy bol'nitsy.

(DUODENUM, surg.

closure of stump with gastrorrhaphiatome)

(SURGERY, appar. and instruments

gastrorrhaphiatome, use in closure of duodenal stump)

TELKOV, N. A.: Doc Med Sci (diss) -- "A comparative evaluation of various methods of intestinal suture in repairing anastomosis under experimental and clinical conditions". Novosibirsk, 1958. 25 pp (Inst of Surgery im A. V. Vishnevskiy Acad Med Sci USSR, and Novosibirsk Med Inst), (KL, No 1, 1959, 122)

TELKOV, N.A., kand. med. nauk

Wound-retractor and a slight variation of suture in esophagoenteric anastomosis. Khirurgia 34 no.3:117-118 Mr '58. (MIRA 12:1)

1. Iz kafedry gosspital'noy khirurgii (zav. - prof. I.L. Bregadze) Novosibirskogo meditsinskogo instituta na baze 9-y bol'nitsy (glavnyy vrach V.P. Tatar sentsev).

(GASTRECTOMY

with esophageal-intestinal anastomosis; wound dilator & suture variation (Rus))

(ESOPHAGUM, surg.

esophageal intestinal anastomosis in gastrectomy, wound dilator & suture variation (Rus))

(INTESTINES, surg.

same)

TELKOV, N.A., kand.med.nauk (Novosibirsk, Kirovskiy r-n, ul. Stanislavskogo d.6, kv.7)

Comparative evaluation of various methods of intestinal suturing during anastomosis healing [with summary in English, p.158-159].  
Vest.khir. 80 no.1:82-95 Ja '58. (MIRA 11:4)

1. Iz gosital'noy khirurgicheskoy kliniki (zav. - prof. I.L. Bragadze) Novosibirskogo meditsinskogo instituta na baze 9-y bol'nitsy (gl.vrach - V.P.Tatarintsev)  
(GASTRECTOMY  
enterorrhaphy, tseyhnic (Rus))

TELKOV, N.A., kand.med.nauk

Repeated stomach surgery. Sov.med. 23 no.7:121-123 J1 '59.  
(MIRA 12:11)

1. Iz khirurgicheskogo otdeleniya (zav. - N.A.Telkov) 9-y  
Novosibirskoy gorodskoy bol'nitsy (glavnyy vrach V.P.Tatarintsev).  
(STOMACH surgery)

TELKOV, N.A. (Novosibirsk, Kirovskoy r-n, ul. Stanislavskogo, d.6, kv.7)

Resection of the stomach in situs inversus viscerum. Vest.khir.  
no.7:122-123 '61. (MIRA 15:1)  
(STOMACH—SURGERY) (VISCERA—ABNORMALITIES AND DEFORMITIES)

TELKOV, N.A., doktor med.nauk

Suturing of perforating gastroduodenal ulcers with a chain-like  
seromuscular suture. Vest.khir. no.9:121-123 '61. (MIRA 15:3)

1. Iz gosptal'noy khirurgicheskoy kliniki (zav. - prof. I.L.  
Bregadze) Novosibirskogo meditsinskogo instituta na baze 9-y  
bol'nitsy (glavnyy vrach - B.P. Kanygin).  
(PEPTIC ULCER) (SUTURES)



TELKOV, N. A. (Novosibirsk, ul. Stanislavskogo, d. 6, kv. 7);  
~~ZUBAREVA~~, N. S.; SOKOLOVA, G. S.

Autoplasty of the femoral artery with a venous transplant in  
gunshot injuries. Vest. khir. no.12:85-86 '61. (MIRA 15:2)

1. Iz travmatologicheskogo otdeleniya 9-y Novosibirskoy klini-  
cheskoy bol'nitsy.

(FEMORAL ARTERY—SURGERY)  
(VEINS—TRANSPLANTATION)  
(GUNSHOT WOUNDS)

TELKOV, N.A.

Tumors of the mediastinum in children. Grad. khir. 3 no.2:115-116  
'61. (MIRA 17:4)

(MEDIASTINUM—TUMORS)

TELKOV, N.A., doktor med.nauk

Inadequacy of suture of the duodenal stump and gastric resection for  
the exclusion of ulcers. Sov. med. 25 no.9:112-115 3 '61.  
(MIRA 15:1)

1. Iz kafedry fakul'tetskoy khirurgii lechebnogo pediatricheskogo  
i sanitarno-gigiyenicheskogo fakul'tetov (zav. - doktor med.nauk  
N.A.Telkov) Omskogo meditsinskogo instituta (dir. - prof. I.S.Novitskiy)  
i Novosibirskoy 9-y Gorodskoy bol'nitsy (glavnyy vrach B.P.Konygin).  
(STOMACH SURGERY)

TELKOV, N.A.

Anatomical and histological data characterizing experimental  
intestinal sutures. Eksper. khir. i anest. 7 no.5:63-64,  
S-O '62. (MIRA 17:10)

1. Iz kafedry fakul'tetskoy khirurgii (zav.-- prof. N.A. Telkov)  
Astrakhanskogo meditsinskogo instituta.

TELKOV, N.A., prof. (Novosibirsk, 100 ul. Stanislavskogo, d.6, kv.7)

Use of the 8-shaped suture and hepatic clamp in resection of the liver. Vest.khir. 90 no.3:54-58 Mr'63. (MIRA 16:10)

1. Iz fakul'tetskoy khirurgicheskoy kliniki (zav. - prof. N.A. Telkov) Astrakhanskogo meditsinskogo instituta imeni A.V. Lunacharskogo (rektor - dotsent I.N. Alandarov) i Novosibirskoy 9-y klinicheskoy bol'nitsy (glavnyy vrach - A.I. Fedorova).  
(LIVER--SURGERY) (SUTURES)

TELKOV, N.A., prof. (Novosibirsk)

Review of V.A. Malkhasian's book "Technique of operations on  
the stomach." Vest. khir. 93 no.11:133-135 N '64. (MIRA 18:6)

MIRZAYEV, A.P., dotsent (Leningrad); TELKOV, N.A., prof. (Novosibirsk)

Reviews. Vest. khir. 94 no.1:155-159 Ja '65.

(MIRA 18:7)

TELKOV, V.P.

Analysis of the causes of death of patients who have undergone  
cholecystitis operations. Trudy LSCMI 74:160-164 '62. (MIRA 17:10)



USSR/Microbiology - Microbes Pathogenic for Man and Animals. F  
Bacteria. Bacteria of the Intestinal Group.

Abs Jour : Ref Zhur Biol., No 22, 1958, 99356

Author : Telkova, K.A.

Inst :

Title : On the Problem of the Laboratory Diagnosis of Sonne  
Dysentery.

Orig Pub : Zdravookhr. Belorussii, 1958, No 4, 38-40

Abstract : No abstract.

Card 1/1

TELKOVA, K.A., Cand Med Sci — (diss) "Clinical and laboratory  
diagnosis of ~~K~~ ~~onne~~ dysentery." Izhevsk, 1959, 21 pp  
(Izhevsk State Med Inst) 200 copies (KL, 33-59, 122)

- 74 -

TELKOVA, L.A.

New data on the mode of food intake in the flagellates of the  
genus Rhynchomonas. Zool zhur. 43 no.4:606-607 '64  
(MIRA 17:8)

1. Sevastopol Biological Station, Academy of Sciences of  
Ukrainian S.S.R., Sevastopol.

TELKOVA, L.P.

27673

DRABKINA, B.M. I TELKOVA, L.P. Zrelost' polovykh produktov  
U samok kubanskoy sevryugi I leykotsitarnaya formula krovi.  
trudy laboratorii osnov rybovodstva, T. II, 1949, s. 258-61.  
---Bibliogr: 6 nazv.

SO: Knizhnaya Letopis, Vol. 1, 1955

TELKOVA, L.P.

Stimulating ovulation in fish. Vop. ikht. no. 2:112-113 '54.  
(MLRA 8:5)

1. Moskovskiy tekhnicheskiy institut rybnoy promyshlennosti i  
khozyaystva imeni A.I. Mikoyana - Mosrybvtuz.  
(Ovulation) (Fishes--Physiology)

L 36175-66 ENT(m)/EWP(j) WJW/JW/RM  
ACC NR: AP6014263

SOURCE CODE: UR/0153/66/009/001/0063/0064  
31  
11

AUTHOR: Kozlov, L. M.; Burmistrov, V. I.; Tolkova, T. F.

ORG: Department of Chemistry and Petroleum and Gas Technology, Kazan Chemical Engineering Institute im. S. M. Kirov (Kafedra khimii i tekhnologii nefi i gaza, Kazanskiy khimiko-tekhnologicheskii institut)

TITLE: Synthesis of nitroalkyl esters of boric acid 1

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 9, no. 1, 1966, 63-64

TOPIC TAGS: borate, boric acid, alcohol, organic nitro compound

ABSTRACT: The reaction of boric anhydride with a series of primary, secondary, and tertiary nitro alcohols was studied for the first time. The alcohols used were 2-nitroethanol, 2-nitro-1-propanol, 1-nitro-2-propanol, 2-nitro-2-methyl-1-propanol, 2-nitro-3-butanol, 1-nitro-2-pentanol, 2-nitro-2-methyl-3-butanol, 3-nitro-2-pentanol, 1-nitro-4-methyl-2-pentanol, and 1-nitromethyl-1-cyclohexanol. Primary alcohols reacted with boric anhydride more readily than secondary ones. The reaction of tertiary alcohols was the most difficult. Under the same conditions, the yield of nitroalkyl borates decreases with increasing molecular weight of the nitro alcohol. The tris-nitroalkyl borates obtained are very sensitive to hydrolysis and hydrolyze in moist air, but are stable when heated to 200-220°C. Orig. art. has: 2 tables.

SUB CODE: 07/ SJEM DATE: 09Dec63/ ORIG REF: 002

Card 1/1

UDC: 547.434:542.951.3

SADYKOVA, F.Kh.; MOROZOVSKAYA, I.S.; SEDOVA, G.V.; TELKOVA, Ye.I.

Optimum size of strips used in determining tearing loads for  
textile fabrics. Standartizatsiia 25 no.1:30-33 Ja '61. (MIRA 14:3)

(Textile fabrics--Testing)

SOBOL', S.I.; NELEN', I.M.; SPIRIDONOVA, V.I.; BERLIN, Z.L;  
GORIACHKIN, V.I.; TARAKANOV, B.M.; SHKURSKIY, V.D.; Prinimali  
uchastiye: FREYMAN, A.K., inzh.; BRUK, B.M., inzh.;  
CHEBOTKEVICH, G.V., inzh.; OSPIN, V.G., inzh.; ALEKSANDROVA, N.N.,  
laborant; SALT'YKOV, I.B., laborant; TELKOVA, Ye.I., laborantka;  
TEPLYAKOV, Yu.M., laborant; GAVRILENKO, A.P., slesar';  
KURGUZOV, A.S., elektrik; GAVRILOV, I.T., elektrik

Pilot-plant testing of the State Institute of Nonferrous  
Metals flow sheet for the autoclave retreatment of copper-  
molybdenum intermediate products. Sbor. nauch. trud. Gin-  
tsvetmeta no.19:319-339 '62. (MIRA 16:7)

(Nonferrous metals—Metallurgy)  
(Leaching)



LIPKOV, I.A., kand.tekhn.nauk; GRECHUKHINA, N.A., inzh.; TELKOVA, Ye.I.;  
SAVINA, V.N., tekhnik

Processing of the new types of synthetic fiber yarns (in mixtures  
and as such) in the manufacture of knit goods. Nauch.-issl.trudy  
VNIITP no.4:118-141 '63. (MIRA 17:4)

TELKOVA, L.P.

Completion of spawning stock of the Atlantic and Scandinavian  
herring at the expense of the high-yield generation of 1950.  
Trudy PINRO no. 14:141-149 '62.

(MIRA 17:10)

LIPKOV, I.A.; GRECHUKHINA, N.A.; TELKOVA, Ye. I.

Developing the technology of knit outerwear production from  
bulked synthetic yarns. Nauch.-issl. trudy VNIITP no. 5:62-79  
'64 (MIRA 19:1)

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H-2

*TEL'KOVSKIY V.G.*  
Category : USSR/Photoeffect - Electron and Ion Emission

Aba Jour : Ref Zhur - Fizika, No 1, 1957, No 1653

Author : Tel'kovskiy, V.G.

Title : Secondary Electron Emission from Metals Under the Influence of Ions and Neutral Particles.

Orig Pub : Dokl. AN SSSR, 1956, 108, No 3, 444-446

Abstract : An investigation was made of secondary electron emission of metals under the influence of hydrogen, helium, nitrogen, neon, argon, molybdenum, and neutral atoms of inert gases with energies from several to 120 kev. The investigation was made with a mass spectrometer, and the pressure of the residual gases in the target region did not exceed  $3 \times 10^{-8}$  mm mercury. The target surface was purified by heating to 2500 -- 3000° K and its purity was monitored during the measurement by checking whether the secondary electron emission coefficient  $\gamma$  remained independent of the density of the stream of bombarding particles. The targets employed were made of Mo, Zr, Ni, Ta, Cu and graphite. Experience has shown that  $\gamma$  increases linearly up to particle speeds of  $2 \times 10^8$  cm/sec, followed by a gently-sloping maximum followed in turn by a smooth decrease. In all cases, a threshold of secondary electron emission is observed in the  $0.5 -- 2 \times 10^7$  cm/sec range. The investigation has shown that the secondary electrons have a Maxwellian velocity distribution. The average energy of the secondary electrons is independent of

Card : 1/2

H-2

Category : USSR/Photoeffect - Electron and Ion Emission

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 1653

the energy of the incident particles. The proportionality of  $\gamma$  to the number of particles contained in a molecular ion suggests that when the ion approaches the surface it decomposes and interacts as the sum of individual ions. The value of  $\gamma$  depends only on the energy of the incident particles and not on their charge; consequently, the theory of the potential breakaway of electrons does not agree with the fact.

Card : 2/2

TELKOVSKIY, V., <sup>[G.]</sup> Moscow

"The Electron Liberation From Metallic Targets by the Impact of Positive Ions and Atoms," a paper presented at the Third International Conference on Ionization Phenomena in Gases, 11-15 Jun 57, Venice.

SO: B-3,087,498



TEL'KOVSKIY, V.G.

20-5-25/67

AUTHOR  
TITLE

TEL'KOVSKIY V.G., PISTUNOVICH V.I.

The Transition of Ions of Different Gases Through a Thin Silver Foil. (Prokhozhdeniye ionov razlichnykh gazov cherez ton'kuyu serebryanuyu fol'gu.- Russian)

PERIODICAL  
ABSTRACT

Doklady Akademii Nauk SSSR 1957, Vol 113, Nr 5, pp 1035-1038 (USSR)

The authors of the paper under review developed a method with the aid of which it is possible to obtain a thin silver foil (thickness up to 40 millimicrons), and investigated the transition of ions of He<sup>+</sup>, H<sup>+</sup>, C<sup>+</sup>, N<sup>+</sup> and O<sup>+</sup> through the foils of a thickness of 40 to 60 millimicrons. The dimensions of the crystals must be considerably smaller than the thickness of the foil. The manufacturing and production of the foils are discussed in great detail. The investigations were carried out with the aid of a device of the type of a large magnetic mass spectrometer of a length of approximately 5 m and with a rotation of the bundle by 25 degrees. An arc discharge in a longitudinal magnetic field served as ion source. The density of the ion current in the neighbourhood of the slot of the gas discharge chamber amounted up to 100 milliamperes/cm<sup>2</sup>, and it was possible to continuously regulate it during the operation of the device. The receiver is surrounded with a copper cover at the temperature of liquid nitrogen. The energy loss of the ions at the transition through the foil was determined by means of the method of the retaining potential. The measurement errors remained below

CARD 1/2

20-5-25/67

The Transition of Ions of Different Gases Through a Thin Silver Foil.

CARD 2/2

1 %. The principles of the construction of the receiver and the measuring arrangement are clearly represented in a diagram. The results of the measurements of the dependence of the energy losses and of the velocity of the ions  $H^+$  and  $He^+$  upon the mean velocity of the ions are shown in two diagrams. A chart contains the threshold values of the energies and of the velocities at which a transition of different ions through a silver foil of a thickness of 55 millimicrons is observed. If the velocities are the same, the velocity losses are equal (within the limits of the measurement errors) for all atomic ions investigated. The essential element in the mechanism of the energy transmission is the velocity of the ions going through the foil. Finally, the paper under review gives an estimate of the number of the neutral particles leaving the foil for  $H^+$  and  $He^+$  at  $E > 25$  keV and of the remaining ions at the threshold energies. This estimate, however, has only a qualitative character. As far as the ions  $He^+$ ,  $C^+$ ,  $N^+$  and  $O^+$  are concerned, the neutral atoms are predominant in the energy interval investigated (approximately 70 to 80 % of the total number).  
(3 reproductions, 1 chart)

ASSOCIATION: not given.

PRESENTED BY: L.A. Artsimovich, Member of the Academy, 14.12. 1956

SUBMITTED: 5.11. 1956

AVAILABLE: Library of Congress.

88433

S/056/60/039/006/022/063  
B006/B056

26.2321  
AUTHORS:

Ioffe, M. S., Sobolev, R. I., Tel'kovskiy, V. G.,  
Yushmanov, Ye. Ye.

TITLE:

Investigation of the Confinement of Plasma in a Trap With  
Magnetic Plugs

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,  
Vol. 39, No. 6(12), pp. 1602 - 1611

TEXT: A report is given on plasma confinement in a cylindrical magnetic mirror which is some 10 cm in size. The experiments were carried out with a hydrogen plasma having a mean density of  $\sim 1 \cdot 10^9 \text{ cm}^{-3}$ , at a minimum pressure of the neutral gas of  $\sim 3 \cdot 10^{-7} \text{ mm Hg}$ . The mean ion energy was 1 - 2 kev, the electron energy  $\sim 10 \text{ ev}$ ; the magnetic field was 5 - 8 koe. In this case, it is possible to reckon with adiabatic and quasineutral conditions, i.e. the Larmor radius of the ions is small compared with the dimensions, and the Debye screening radius is small compared with the region filled by the plasma. The greatest losses in fast ions occur as a

Card 1/4

88433

Investigation of the Confinement of Plasma in a Trap With Magnetic Plugs S/056/60/039/006/022/063  
B006/B056

result of charge exchange with the neutral gas. The experimental arrangement, in which the experiments were carried out, is shown in Fig.1. The maximum field in the center of the trap (constant in time), was 8000 oes, and in the plugs it was 12,400 oes, i.e. the plug ratio was 1.55. The mean lifetime  $\tau$  of the fast ions in the trap was measured as a function of pressure for different accelerating voltages, magnetic fields, and plug ratios in the hydrogen pressure range of  $3 \cdot 10^{-7}$  -  $2 \cdot 10^{-5}$  mm Hg. The experimentally determined  $1/\tau$ -values are, as shown, indeed linear functions of pressure, as must be expected also of charge exchange processes. Also the flux of fast neutral particles and therefore also the current of secondary electrons in the range of  $2 \cdot 10^{-7}$  -  $3 \cdot 10^{-6}$  mm Hg is a linear function of pressure. If pressure is reduced, the neutral-particle flux tends toward zero (and not toward a constant value). Among the processes developing in the plasma, there may also be the process  $H^+ + H_2^+ \rightarrow H + 2H^+$ , which fact has been pointed out by G. I. Budker. However, it was found that the ion escape from the trap takes place much more quickly than would be expected, if only charge exchange and scattering processes are taken

Card 2/4

88433

Investigation of the Confinement of Plasma  
in a Trap With Magnetic Plugs

S/056/60/039/006/022/063  
B006/B056

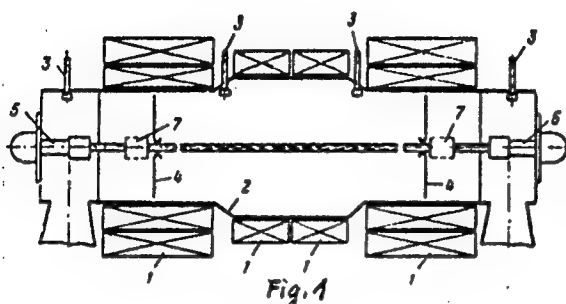
into account. Thus, additional losses of fast ions must be assumed, whose time dependence was investigated. It was found that the losses not connected with charge exchange decrease with time until eventually they vanish completely. Such anomalous losses of ions are due to the presence of plasma in the trap. If the density of the charged particle is so low that the Debye range is of the same order as the trap dimensions, the losses are equal to zero. The authors thank Academician L.A.Artsimovich and B. B. Kadomtsev for their interest, advice, and discussions, V. M. Petrov, E. N. Braverman, and Yu. T. Bayborodov for their technical collaboration. There are 9 figures, 2 tables, and 11 references: 7 Soviet, 1 Swiss, and 2 US.

SUBMITTED: July 20, 1960

Card 3/4

88433

S/056/60/039/006/022/063  
B006/B056



Text to Fig.1: 1) Coils for generating the magnetic field. 2) Vacuum chamber. 3) Titanium vaporizer. 4) Diaphragms. 5) Plasma source. 6) Receiving electrode. 7) Top fixture.

Card 4/4

~~TELKOVSKY, V. G.~~  
—TOLKOVSKY, V. G. and GOTT Yu. B. and IOFFE, N. S.

"Some new results on the confinement of magnetic traps"

Report presented at the Conference on Plasma Physics and Controlled  
Nuclear Fusion, Salzburg, Austria, 4-8 Sep 61

21208

S/188/61/000/001/003/009  
B108/B209

26.2322  
AUTHORS: Molchanov, V. A., Tel'kovskiy, V. G.

TITLE: A mass monochromator with double focusing in a sectorial magnetic field

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya 3, fizika, astronomiya, no. 1, 1961, 22-28

TEXT: In the laboratoriya kafedry atomnoy fiziki Moskovskogo universiteta (Laboratory of the Department of Atomic Physics of Moscow University), a mass spectrometer has been designed which delivers an ion current of a few milliamperes at an accelerating voltage of up to 35 kv. In this paper, a similar device is described, intended for ion-beam experiments as well as for the separation of small quantities of isotopes. In work with high ion-current densities, ion sources of an aperture of a few millimeters must be used and, consequently, a dispersion of 1 cm for a relative mass difference of 1% was chosen. The weight of the magnet which should not exceed 2 tons sets a limit for the power of the source. The magnet of the device under consideration was designed in the form of a sector with a

Card 1/6



21208

S/188/61/000/001/003/009

B108/B209

A mass monochromator with...

central angle of  $67^\circ$ . In order to attain high current density and dispersion, an axially symmetric magnetic field with horizontal and vertical focusing was used. In the calculation of the monochromator, the authors employed Malov's method (Ref. 4: Baranov S. A., Malov A. F., Shlyagin K. N. PTE, no. 1, 3, 1956). The edges of the field change the angle through which the ion beam enters the sector, and shift the beam sideward, but both effects cannot be determined accurately. Therefore, the authors used a field which is proportional to  $r^{1/2}$  ( $r$  denotes the radius of the sectorial magnet) in the center of the sector, since such a field can accomplish double focusing for any  $r$  without astigmatism, so that a lateral displacement of the beam is insignificant. The magnet (except for the profile of the pole ends) was calculated in linear approximation. The initial quantities were the dispersion, the maximum energy (35 kev) of the single-charged ions (mass 200 absolute units), and the angular divergence of the beam. The magnet is made of Armco iron. Its windings are copper pipes through which water is conducted; the current density in these windings reaches  $6 \text{ a/mm}^2$ . The magnet is fed by d-c of 100 a and 200 v, stabilized to 0.01%. The vacuum system (Fig. 1)

Card 2/6

21208

S/188/61/000/001/003/009  
B108/B209

A mass monochromator with...

essentially consists of three sections, viz., the chamber with the ion source, the monochromator plus ion ducts, and the fission chamber; each of these sections is evacuated to  $10^{-6}$  -  $10^{-7}$  mm Hg by an H-2T (N-2T) pump (2000 l/sec). The ion-source chamber is made of brass, and all the other parts of copper. The ion-source chamber, the ion ducts, and the monochromator are cooled by running water. The diaphragms 6 are made of stainless steel. A special jacket in the fission chamber provides nitrogen temperatures. By this vacuum system, a pressure drop by about 100 times could be attained between ion-source chamber and fission chamber. The ion source consists of a water-cooled discharge cylinder with a tungsten cathode which is heated by electron bombardment from an incandescent wire. The electrons emitted from the tungsten cathode into the discharge cylinder oscillate in the longitudinal magnetic field which is applied between cathode and first lens, thus causing strong ionization of any gas or vapor conducted into the cylinder. The ion beam is focused by two lenses, the first of which has a negative potential with respect to earth, and the second has earth potential. The high voltage was stabilized to 0.01%. Such an ion source delivers a current of 50 - 70 ma with a divergence of not more than  $5^{\circ}$ . In essential, this source is

Card 3/6

21208

S/188/61/000/001/003/009  
B108/B209

A mass monochromator with...

analogous to that designed by L. A. Artsimovich (Ref. 7: "Atomnaya energiya", III, 483, 1957) et al. Since the exact deflection of the ion beam could not be calculated, a stainless steel siphon (Fig. 1, no. 8) was inserted between the monochromator and the second ion duct. Optimum focusing was attained at an angle of  $85^{\circ}$ ; the distance between source and magnetic pole end was 1400 mm. Readings are taken from an aluminum screen on which the focused ions leave clear marks. For a qualitative determination of the resolution of this device, a mass spectrogram of Xe was taken. The principal characteristic of this device is the fact that dispersion does not depend on the angle of deflection of the beam since the distance between magnet and focus is diminished by narrowing down the angle. At a voltage of 35 kv, a current density of 2 - 3 ma/cm<sup>2</sup> may be attained at the target. The high resolution and good dispersion permit preparing isotopic targets of almost any element. The authors thank Academician L. A. Artsimovich for interest, A. F. Malov for help in the calculation of the magnet, and V. M. Kel'man and D. L. Kaminskiy for valuable advice. There are 3 figures, 1 table, and 7 references: 6 Soviet-bloc and 1 non-Soviet-bloc.

Card 4/6

S/188/61/000/001/003/009  
B108/B209

A mass monochromator with...

ASSOCIATION: NIIYaF kafedra atomnoy fiziki (Scientific Research Institute  
of Nuclear Physics, Department of Atomic Physics)

SUBMITTED: July 18, 1960

Card 5/6

21208

S/188/61/000/001/003/009

B108/B209

A mass monochromator with...

Legend to Fig. 1: 1 - chamber with ion source, 2 - coil generating the longitudinal magnetic field in the discharge cylinder, 3 - N-2T pumps, 4 - window, 5 - ion ducts, 6 - diaphragms, 7 - mass monochromator, 8 - siphon, 9 - fission chamber.

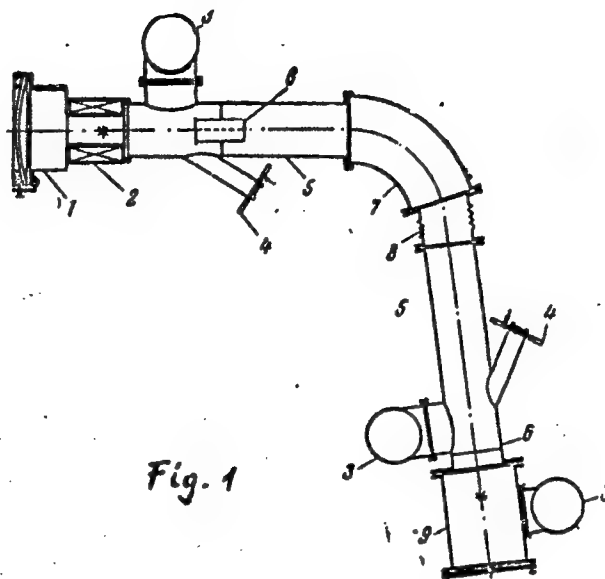


Fig. 1

Card 6/6

DUSHKOV, I.I.; MOLCHANOV, V.A.; TEL'KOVSKIY, V.G.; CHICHEROV, V.M.

Some angular relationships in cathode sputtering. Zhur.tekh.fiz.  
31 no.8:1012 Ag '61. (MIRA 14:8)

(Sputtering (Physics))

27168  
S/057/61/031/009/008/019  
B104/B102

24.6710

AUTHORS: Gott, Yu. V., and Tel'kovskiy, V. G.

TITLE: Determination of the ionic energy in a high-temperature plasma by means of thin foils

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 9, 1961, 1061-1065

TEXT: The method of measuring the ionic energies and the energies of neutral particles by means of thin foils is based on the fact that after the passage of a ray through several atomic layers, the fractions of charged and neutral particles within the foil do not depend on their original charge. The main difficulty of this method lies in the production of thin homogeneous foils. The authors produced films by sputtering silver at  $10^{-5}$ - $10^{-6}$  mm Hg on an aluminum foil (2-3  $\mu$  thick). The silver was evaporated. The temperature of the Al base layer exerted a great effect on the quality of foils. In the tests described the Al base layer was kept at nitrogen temperature. After production of the silver foil, the aluminum was removed with caustic soda. Then, the silver foil was taken out from the solution with a very fine copper net.

Card 1/3

27168

S/057/61/031/009/008/019

B104/B102

Determination of the ionic energy in...

The resulting foils had thicknesses of 100-2000 Å, and a size of 10-20 cm<sup>2</sup>. Their inhomogeneity was less than 4 %. After the ion beam has passed through the foil with an energy below 20 kev it contained many neutral particles. Behind the foil, an insulated collector was installed in front of which a grid was arranged with a potential of +40 v against the collector. Thus, both the ions and the neutral particles (due to secondary electron emission) could be recorded. Since every foil is porous, a certain current always reaches the collector at any velocity of ions. The current to the collector increases considerably from the ionic energy at which the ions begin to pass through the foil. This energy is called threshold energy. Measurements with hydrogen, deuterium, and helium ions showed this threshold energy to be proportional to the foil thickness up to a foil thickness of about 1300 Å. At a foil thickness of 100 Å, the energy of hydrogen and deuterium ions can be measured from 500 ev, that of helium ions from 2000 ev. The effect of ion scattering was eliminated by use of a semispherical collector. Thus, it was shown that the current to the collector may be well described by

Card 2/3



27168

S/057/61/031/009/008/019

B104/B102

Determination of the ionic energy in...

$I_{\text{coll}} = \alpha (E - E_{\text{thresh}}) I_0$ ;  $\alpha = A/d^n$ .  $d$  is the thickness of the foil;  $A$  is a constant mainly dependent on the coefficient of secondary electron emission;  $n = 0.85$  for  $H^+$ ,  $0.42$  for  $D^+$ , and  $0.2$  for  $He^+$ . The following is obtained for the determination of the integral spectrum:

$$\int_{E_{\text{thresh}}}^{E_{\text{max}}} I(E) dE = \frac{1}{\alpha^2} I_{\text{coll}} \frac{d\alpha}{dE_{\text{thresh}}} - \frac{1}{\alpha} \frac{dI_{\text{coll}}}{dE_{\text{thresh}}}.$$

The authors thank Academician L. A. Artsimovich for valuable advice. There are 3 figures, 1 table, and 9 references: 7 Soviet and 2 non-Soviet. The reference to the English-language publication reads as follows: I. A. Phillips, Phys. Rev., 97, 2, 404, 1955.

SUBMITTED: October 17, 1960

Card 3/3

89202

S/056/61/040/001/007/037  
B102/B204

26.2321

## AUTHORS:

Ioffe, M. S., Sobolev, R. I., Tel'kovskiy, V. G.,  
Yushmanov, Ye. Ye.

## TITLE:

Escape of plasma from a magnetic mirror trap

## PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40,  
no. 1, 1961, 40-48

TEXT: This paper is a continuation of an earlier paper (Ref. 1), in which the authors studied the retaining of a hydrogen plasma with a thickness of  $10^9$  cm<sup>-3</sup>, which consisted of fast ions (1-2 kev) and slow electrons (~10 ev). Anomalous fast escape of ions from the magnetic mirror trap could be found, which was caused not alone by the charge-exchange losses. In order to get to the bottom of this additional leakage, experiments were undertaken for the purpose of a direct measurement of the fast ions leaving the magnetic trap. The losses which occurred through the end walls, and which occurred through the lateral walls were studied separately. For the purpose of measuring the quantity of ions leaving the trap through the end walls (in the direction of the magnetic fields) a sector-shaped metal electrode (1/6 of

Card 1/8

89202

S/056/61/040/001/007/037  
B102/B204

Escape of plasma ...

the end-wall area), to which the -20 v were applied for the purpose of preventing an impinging of plasma electrons, was used. By means of the signals emitted from the sector, the charges conveyed to the sector by ions were measured. Fig. 1 shows the lateral and front view of the electrodes, as well as the comb-like arranged 8-plate electrodes, by means of which the quantity of ions (thus only that of the fast ions) could be determined additionally and independently. From the recordings of sector electrode and comb electrodes, the following quantities of fast ions

$\alpha$	1.33	1.55	2.0	2.35
$10^7 q_{\text{sect}}, \text{ coul.}$	3.3	8.7	12.8	10.8
$10^7 q_{\text{tot}}, \text{ coul.}$	46	125	200	200

and the following quantities of slow ions

Card 2/8

89202

8/056/61/040/001/007/037  
B102/B204

Escape of plasma ...

$\alpha$	1.33	1.55
$10^8 Q_{\text{sect}}, \text{ coul.}$	5.5	19.0
$10^8 Q_{\text{comb}}, \text{ coul.}$	2.4	7.6
$Q_{\text{slow}}/Q_{\text{fast}}, \%$	$\sim 5$	$\sim 15$

could be found to exist.  $\alpha = H_{\text{max}}/H_0$ ,  $Q_{\text{tot}}$  is the total charge inciding upon the two end walls, due to the additional escape mechanism. The quantity of fast ions inciding upon the lateral walls (perpendicular to the H-field) was measured by means of an arrangement shown in Fig. 2. The electrodes had a size of  $2.8 \text{ cm}^2$  and had a distance of 10 mm from the chamber wall. To the measuring electrode a -20 v was again applied. The measurements yielded the following results:

Card 3/8

S/056/61/040/001/007/037  
B102/B204

Escape of plasma ...

$\alpha$	1.33	1.55	2.0	2.35
$10^6 Q_{\text{side}}$	0.83	1.8	4.4	5.8
$10^6 Q_{\text{tot}}$	1.9	5.3	16.3	23.2
$q_{\text{wall}} \%$	43	34	27	25

$Q_{\text{tot}}$  again denotes the total charge of fast ions inciding upon the lateral walls due to the mechanism of additional losses,  $q_{\text{wall}}$  is the ratio of these charges. Thus, up to 40% of the fast ions, leaving the trap in consequence of the mechanism responsible for the additional losses, may do so through the lateral walls. Fig. 3 shows a typical oscillogram of the current from the comb electrodes (a) and from the side wall (b). The results of these studies confirm the conclusions drawn in Ref. 1 with respect to the anomalously high fast ion losses. The major part of these losses, no less than

Card 4/8

Escape of plasma ...

S/056/61/040/001/007/037  
B102/B204

80%, is due to an escape to the side walls, and only about 20% to an escape to the end walls of the trap. The escape is nonsteady, the ions are thrown out from regions not connected with one another, whose dimensions - perpendicular to the magnetic field - are small compared to the trap diameter, which, however, extend throughout the entire length of the trap along the magnetic field. There are 5 figures, 3 tables, and 2 Soviet-bloc references.

SUBMITTED: July 20, 1960

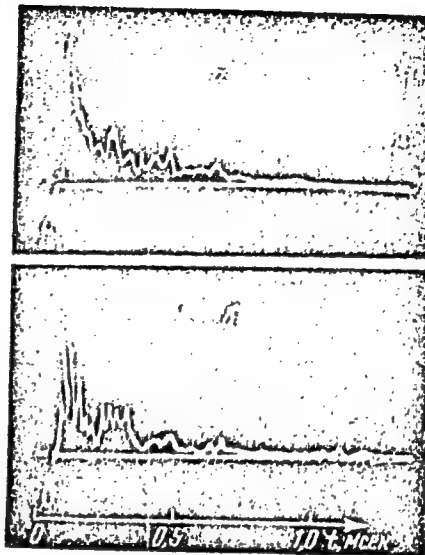
X

Card 5/8

Escape of plasma ...

S/056/61/040/001/007/037  
B102/B204

Legend to Fig. 1: I - measuring electrode (comb), II - fastening, III - diaphragm, IV - sector, V - shield, VI - isolator; 1) cross section, 2) front view, 3) comb, 4) sector, 5) the comb-like arrangement of the electrodes.



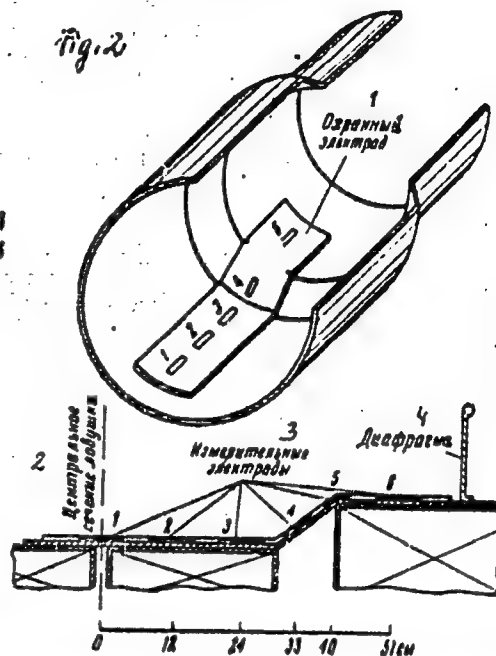
Card 6/8

Escape of plasma ...

S/056/61/040/001/007/037

Fig. 2

Legend to Fig. 2: 1) emergency electrode;  
2) central cross section through the trap;  
3) 6 measuring electrodes; 4) diaphragm.



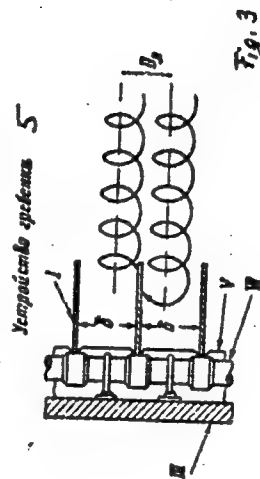
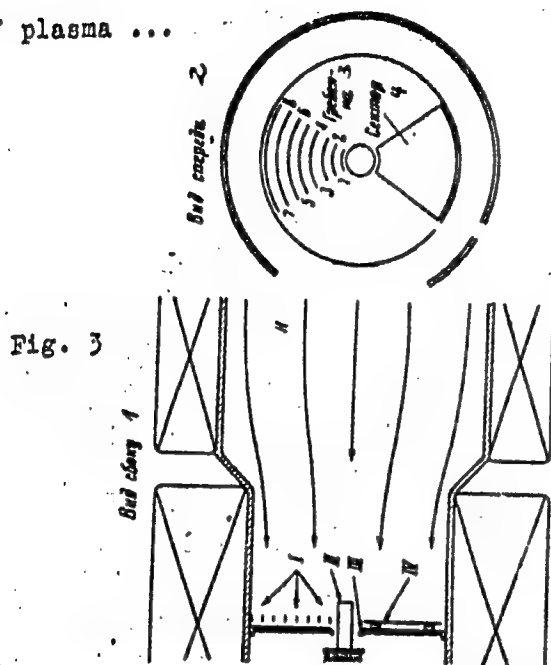
Card 7/8



89202

S/056/61/040/001/007/037  
B102/B204

Escape of plasma ...



Card 8/8

S/020/61/136/004/009/026  
B019/B056

AUTHORS: Molchanov, V. A. and Tel'kovskiy, V. G.  
TITLE: Change in the Coefficient of Cathode Sputtering as a Function  
of the Angle of Incidence of Ions Upon the Target  
PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 4,  
pp. 801 - 802

TEXT: The authors present the results of a study of the cathode sputtering of polycrystalline Cu specimens by argon ions having an energy of 27 kev. The ions incided at an angle of  $0 - 84^\circ$ . Some of the Cu specimens had a minimum of impurities, while others were produced from commercial copper. The purification of the surface was carried out by annealing at  $750 - 800^\circ\text{C}$ , whereby the grain size increased somewhat. The experiments were carried out with a device similar to a mass spectrograph with double focusing of the ion beam in a magnetic field. The ion beam had a current density of  $1-2 \text{ ma/cm}^2$ , and the target was heated to nitrogen temperature, the pressure round the target amounting to  $1-2 \cdot 10^{-7} \text{ mm Hg}$ . Fig.1 shows the coefficient of cathode sputtering for a perpendicular ion  
Card 1/3

Change in the Coefficient of Cathode Sputtering as a Function of the Angle of Incidence of Ions Upon the Target S/020/61/136/004/009/026  
B019/B056 ✓

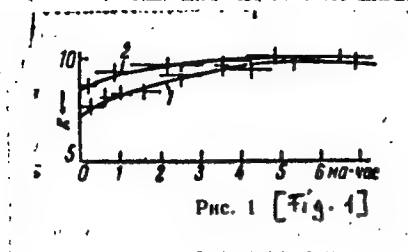
incidence; Fig.2 shows the coefficient as a function of the angle of incidence (curve 1). In addition, this figure shows the product of the coefficient with the cosine of the angle of incidence (curve 2). Thorough investigations showed that up to an angle of incidence of  $70^\circ$ , up to which the cosine law is satisfied (curve 2), the energy loss caused by particle reflection vanishes within the accuracy of measurement. The increasing energy loss above  $70^\circ$ , caused by particle reflection, corresponds to the decrease of the cathode-sputtering coefficient. The energy loss was measured with a special electrode, to which a thermocouple had been fastened. Furthermore, it was found that apart from the energy loss caused by particle reflection, also other factors must be taken into account for the reduction of the cathode-sputtering coefficient. There are 2 figures and 8 references: 2 Soviet, 3 US, 1 German, 1 Italian, and 1 Dutch.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova  
(Moscow State University imeni M. V. Lomonosov)

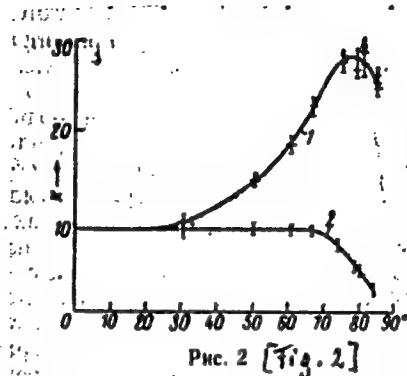
PRESENTED: August 17, 1960, by L. A. Artsimovich, Academician

SUBMITTED: July 25, 1960

Card 2/3



S/020/61/136/004/009/026  
B019/B056



Legend to Fig.1: Cathode-sputtering coefficient for perpendicular incidence of commercial copper (curve 1) and chemically pure copper (curve 2).

Legend to Fig.2: Sputtering coefficient as a function of the angle of incidence (curve 1) and the product of this coefficient with the cosine of the angle of incidence as a function of this angle.

Card 3/3

S/020/61/137/001/010/021  
B104/B209

AUTHORS: Molchanov, V. A., Tel'kovskiy, V. G., and Chicherov, V. M.

TITLE: Anisotropy of cathode sputtering of single crystals

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 1, 1961, 58-59

TEXT: This article presents the results of measurements concerning the dependence of the sputtering coefficient of the (100) face of nickel and copper single crystals on the angle of incidence of ions. The experimental setup has been described in an earlier paper (Ref. 3: V. A. Molchanov, V. G. Tel'kovskiy, Vestn. Moskovsk. univ., v. 1 (1956)). Sputtering was done with singly-ionized 27-kev argon ions; current density was 1-2 ma/cm<sup>2</sup>. The single crystals were polished and then annealed for some time in a vacuum furnace at about 800°C. After this, they were slowly cooled down to room temperature, and their surfaces were chemically etched. Surface condition and orientation of the crystals were examined by X-ray structural analysis. The sputtering coefficients (atoms/ion) are plotted versus the angle of incidence in Figs. 1 and 2. Curve 1 in Fig. 2 was taken at a Cu single crystal, curve 2 in Fig. 2 at polycrystalline copper. ✓

Card 1/3

Anisotropy of cathode...

S/020/61/137/001/010/021  
B104/B209

The results of analogous measurements with a nickel single crystal are shown in Fig. 3. The results found with these two single crystals are very complicated. The position of the minima is the same for both single crystals and corresponds to the angles of incidence of the ion beam, which coincide with the crystallographic axes (100), (111), and (112). The authors note the non-monotonic dependence of secondary-electron emission on the angle of incidence which differs for copper by more than twice the amount at an angle of incidence of  $36^\circ$  and  $48^\circ$ . The single crystals used in the experiments described here were grown at the Institut kristallografii AN SSSR (Institute of Crystallography AS USSR) under the supervision of V. A. Timofeyeva, who is thanked by the authors. Moreover, the authors thank Ye. V. Kolontsova, I. V. Telegina, and N. A. Khatanova for having determined the orientation of the single crystals, as well as I. I. Dushkov for assistance. There are 3 figures and 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta im. M. V. Lomonosova  
(Scientific Research Institute of Nuclear Physics of Moscow State University imeni M. V. Lomonosov)

Card 2/3

Anisotropy of cathode...

S/020/61/137/001/010/021  
B104/B209

PRESENTED: December 17, 1960, by L. A. Artsimovich, Academician

SUBMITTED: December 10, 1960

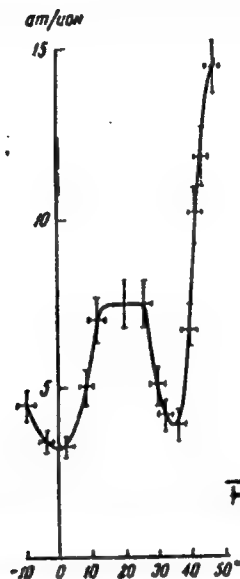


Fig. 3

Card 3/3

24.2200

24049  
S/020/61/138/004/009/023  
B104/B203

AUTHOR: Molchanov, V. A., Tel'kovskiy, V. G., and Chicherov, V. M.

TITLE: Angular distribution of sputtered particles in irradiation of a single crystal by an ion beam

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 4, 1961, 824 - 825

TEXT: The experiments reported here were made with an experimental arrangement described in one of the authors' previous papers (Vestn. Mosk. univ., no. 1, (1961)) and schematically shown in Fig. 1. The ion beam 1 passes a diaphragm 2 and hits the crystal 3. As a collector served the base of the X-ray film which was attached either to a plane (4a) or a curved (4b) copper plate. Fig. 2 shows a photograph of the deposits on the collector, obtained in the irradiation of the (100) plane of a copper single crystal with an argon beam of the energy of 27 eV. The four symmetric patterns correspond to the crystallographic axes [110], and the fifth in the center to the [100] axis. The arrows give the directions in which the deposits were photometrically determined. Figs. 3 and 4 show the results. The different curves correspond

Card 1/6



24049  
S/C20/61/138/004/009/023  
B104/B203

Angular distributions ...

to different  $R$ ,  $d$  ( $d$  = diameter of the ionic beam on the crystal), and angles of incidence  $\alpha$  of the ionic beam. As can be seen, a considerable part of the atoms leaving the target lie within narrow cones whose axes coincide with the crystallographic principal axes of the target. The angular half-width is  $20^\circ$ . The authors state that the "intensity" of the Wehner patterns greatly depends on the angles between the crystallographic principal axes and the sectional plane of the crystal. If the sectional plane of the crystal is none of the crystallographic principal planes, then the more intensive patterns lie in the directions forming smaller angles with the normal of the sectional plane. The authors thank I. A. Shakh-Melikova for assistance in the experiments. There are 4 figures and 9 references: 6 Soviet-bloc and 3 non-Soviet-bloc. The 2 references to English-language publications read as follows: G. K. Wehner, Phys. Rev., 102, 690 (1956); G. K. Wehner, G. S. Anderson, J. Appl. Phys., 31, 2305 (1960).

Card 2/6

Angular distributions ...

24049  
S/020/61/138/004/009/023  
B104/B203

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki  
Moskovskogo gosudarstvennogo universiteta im. M. V.  
Lomonosova ( Scientific Research Institute of Nuclear  
Physics of Moscow State University imeni M. V. Lomonosov)

PRESENTED: March 4, 1961, by L. A. Artsimovich, Academician

SUBMITTED: February 28, 1961

Card 3/6

42728

S/109/62/007/011/007/012  
D295/D308

24.6650  
17.1450

AUTHORS:

Gott, Yu.V. and Tel'kovskiy, V.G.

TITLE:

Deceleration of light ions in thin  
metal foils

PERIODICAL:

Radiotekhnika i elektronika, v. 7,  
no. 11, 1962, 1956 - 1961

TEXT:

The passage of ions with less than 20keV energy through metal foils has been little studied. The small ion velocity makes both Bohr's and Fermi-Teller's formulas inapplicable. In the described experimental investigation a hydrogen, deuterium or helium ion beam from a high-frequency source with 1.5 - 15 keV energy is deviated by  $90^\circ$  by a sectorial magnetic field with double focussing and passes through 100-500 Å thick foils of Ag, Ti and Ge. The output-beam energy distribution is measured by means of an electrostatic analyzer. The specific energy losses (  $-dE/dx$ , where E is the ion energy and x is the transverse coordinate of the foil ) obtained for several foils

Card 1/2

Deceleration of light ions ...

S/109/62/007/011/007/012  
D295/D308

of various thickness are plotted as a function of the mean beam velocity and exhibit a linear relationship for velocities greater than  $10^8$  cm/sec. Departures from linearity below this velocity are interpreted as due to a reduction of the effective charge owing to electron capture. The linearity coefficients are independent of the ion mass and of the properties of the atoms of the target and are determined mainly by the inter-atomic distances of the crystal lattice of the target. Calculations based on a simplified model for the loss mechanism, in which the target is assimilated to a very dense plasma, are in good agreement with experiment and suggest that, for the velocity interval investigated, energy loss is due mainly to collisions with free electrons. The results of similar experiments with molecular ions ( $H_2^+$  and  $H_3^+$ ) confirm this view. These ions are dissociated at a small distance ( $10 - 20 \text{ \AA}$ ) from the target input surface and the energy-loss calculations are to be carried out for the dissociation products separately. The most important English-language reference is: J.R. Young, J.Appl. Phys., v. 27, 1956, 1. There are 6 figures and 1 table.

SUBMITTED: March 19, 1962

Card 2/2

GOTT, Yu. V.; TEL'KOVSKIY, V.G.

Deceleration of light ions in thin metal foils. Radiotekh.  
i elektron. 7 no.11:1956-1961 N '62. (MIRA 15:11)  
(Metal foils)  
(Ions)

u2411

S/040/62/026/011/005/021  
B125/B102

24.6760

26.2312

24 7000

AUTHORS: Molchanov, V. A., and Tol'kovskiy, V. G.

TITLE: Angular characteristics of the destruction of metals by ion beams

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 11, 1962, 1359-1365

TEXT: The Kafedra atomnoy fiziki Moskovskogo universiteta (Department of Atomic Physics of Moscow University), which has been investigating the angular dependence of the destruction of metals by ion beams since a number of years, pays special attention to the case when the ion beam falls at very small angles upon the metal surface. The results of these studies are of great technical importance, such as in the design and construction of thermonuclear reactors. The experimental arrangement consisted of a large mass spectrometer with a doubly focused ion beam in a sectorial magnetic field. The angular convergence of the ion beam is small, and the pressure of the background gas near the focus of the device is low. Although previous investigations were carried out with great

Card 1/3

S/048/62/026/011/005/021  
B125/B102

Angular characteristics of ...

care, their results differed greatly. The influence of the roughness (degree of destruction) of the irradiated surface may be seen from the fact that the sputtering coefficient of a single crystal is independent of the duration of bombardment and of the degree of surface contamination. The sputtering coefficients of "smooth" and "destroyed" polycrystalline surfaces differ considerably; for example, in the case of commercial copper they differ by 25%. At present, it is not yet possible to infer the mechanism of destruction from experimental results. The sputtering coefficient increases in inverse proportion to the cosine of the angle  $\alpha$  at which the ions strike the target. Deviations from this cosine law, occurring at large angles of incidence, are neither due to the reduced transfer of ion energy to the target nor to the effect of the microrelief of the specimen. The sputtering coefficient is a non-monotonic function of  $\alpha$ , but drops sharply when the direction of the ion beam approaches the crystallographic axes of the target. For this reason, grains with properly directed major axes are not destroyed on the sputtered surface. The density of the deposition on a spherical collector with its center in the middle of the irradiated specimen is proportional to the angular distribution of the sputtered particles. In the neighborhood of the

Card 2/3

Angular characteristics of ...

S/048/62/026/011/005/021  
B125/B102

{110} axis, the density of the deposited particles shows a Gaussian distribution with a half-width of  $20^{\circ}$ . The radiative mechanism proposed for the destruction of metals is almost indubitably correct. The problem under consideration was suggested by L. A. Artsimovich.

Card 3/3



37274

S/057/62/032/005/022/022

B104/B102

21.7000

17.2400

AUTHORS:

Molchanov, V. A., Tel'kovskiy, V. G., and Shakh-Melikova, I. A.

TITLE:

Effect of the target temperature on the angular distribution of sputtered particles on irradiation of a single crystal by an ion beam

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 5, 1962, 647-648

TEXT: The effect of radiation damage of a single-crystal lattice on the angular distribution of particles emitted from the crystal on irradiation with ions is explained. It is assumed that when lattice imperfections are present the spot of an X-ray diffraction pattern contracts on increasing the target temperature. The deposits of the sputtered substance are photometered. The width of the spots alters very little for target temperatures between 150 and 700°K. A flat minimum of the spot widths lies

approximately in the middle of the temperature range, i.e., at  $\sim \frac{150+700}{2}^{\circ}\text{K}$ .

For ion current densities of  $1 \text{ ma/cm}^2$  and radiation doses of  $2-3 \text{ ma}\cdot\text{hr/cm}^2$  there is no marked broadening of the angular distribution due to radiation

Card 1/2

Effect of the target temperature...

S/057/62/032/005/022/022  
B104/B102

damage of the lattice if the temperature is not too low. There is 1 figure. *f*

SUBMITTED: July 3, 1961

Card 2/2

S/057/62/032/008/014/015  
B104/B102

AUTHORS: Yendzheyets, G., Molchanov, V. A., Tel'kovskiy, V. G., and  
Faruk, M. A.

TITLE: Angular distribution of evaporated particles in the irradiation of single crystals with an ion beam

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 8, 1962, 1032 - 1033

TEXT: The angular distribution of the particles produced when the (100) faces of copper and nickel single crystals were irradiated with argon and neon ions was measured. The diameter of the single crystal surface irradiated was smaller than 8 mm, the distance between target and collector 95 mm. The target temperature was lower than 1000°C, the angle of incidence of the ions 200°. After irradiation five Wehner spots became visible on the collector: four at the corners corresponding to the (100) axis, (110) axis, and one in the center which corresponded to the (100) axis. The density of the spots was determined photometrically. (Fig. 1). The angular distribution of particles and that of the sputtering coefficient do not depend on mass and energy of the ions. There are 3 figures.

Card 1/2

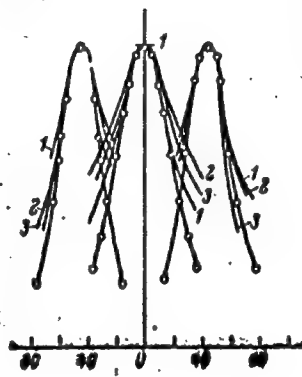
Angular distribution of...

ASSOCIATION: MGU

SUBMITTED: October 24, 1961

S/057/62/032/008/014/015  
B104/B102

Fig. 1



Card 2/2

GOTT, Yu.V.; TEL'KOVSKIY, V.G.

Determining the lifetime of a high-temperature plasma on the basis of  
the duration of neutron emission. Zhur. eksp. 1 teor. fiz. 43 no.3;  
831-834, '62. (MIRA 15:10)  
(Plasma (Ionized gases)) (Neutrons)

42703

S/020/62/147/002/009/021  
B184/B102

24.7000

AUTHORS: Balarin, M., Molchanov, V. A., Tel'kovskiy, V. G.

TITLE: Anisotropy of the cathode sputtering coefficient and the  
focused collisions in monocrystals.

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 147, no. 2, 1962, 331-333

TEXT: The angular dependence and the anisotropy of the sputtering coefficient was investigated under the same experimental conditions as used by V. A. Molchanov and V. G. Tel'kovskiy (DAN, 136, 801, 1961) by rotating zinc monocrystals about their  $\langle 210 \rangle$  axis. The  $\langle 100 \rangle$  directions are the focusing directions in the basic plane. For the other directions, especially the  $\langle 210 \rangle$  direction, indirect focusing is possible. A comparison of the two given curves shows that the mean sputtering coefficient is directly proportional to the distance of corresponding atomic layers. The anisotropy of the angular distribution is a function of focused collisions in the crystal. The position of the extrema depends on the focusing direction. There are 3 figures.

Card 1/2

Anisotropy of the cathode ...

S/020/62/147/002/009/021  
B184/B102

ASSOCIATION: Nauchno-issledovatel'skiy institut yadernoy fiziki  
Moskovskogo gosudarstvennogo universiteta im.  
M. V. Lomonosova (Scientific Research Institute of Nuclear  
Physics of Moscow State University imeni M. V. Lomonosov)

PRESENTED: June 19, 1962, by L. A. Artsimovich, Academician

SUBMITTED: June 11, 1962

Card 2/2

**"APPROVED FOR RELEASE: 07/16/2001**

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L 30103-66 EWI(m)/ETC(f)/EWP(e)/EWP(t)/ETI LIP(c) GG/AT/WH/JH/WH/JD/JG

ACC NR: AP6012509

SOURCE CODE: UR/0181/66/008/004/1288/1290

AUTHORS: Panin, B. V.; Tel'kovskiy, V. G.

ORG: none

TITLE: Pulverization of a substance bombarded by uranium ions

SOURCE: Fizika tverdogo tela, v. 8, no. 4, 1966, 1288-1290

TOPIC TAGS: ion bombardment, uranium, endurance test

ABSTRACT: The authors describe apparatus and a procedure for the measurement of the rate of destruction of structural materials by high-energy neutral or charged particles such as are present in accelerators. The tests were made with 30-kev uranium ions. Inaccuracies of earlier methods are eliminated by bombarding simultaneously a standard copper target, whose pulverization coefficient is known with a high degree of accuracy. The uranium ion current was 1 -- 2 ma/cm<sup>2</sup>. The test procedure is briefly described. The materials tested were <sup>17</sup>SiO<sub>2</sub>, <sup>21</sup>U<sub>2</sub>O<sub>5</sub>, <sup>21</sup>ThO<sub>2</sub>, <sup>17</sup>aluminum, <sup>21</sup>chromium carbide, fused <sup>21</sup>MgO, <sup>17</sup>Ta, <sup>17</sup>W, stainless steel, graphite, <sup>17</sup>Al<sub>2</sub>O<sub>3</sub> (sintered), and <sup>21</sup>BeO. The volume coefficients of pulverization of

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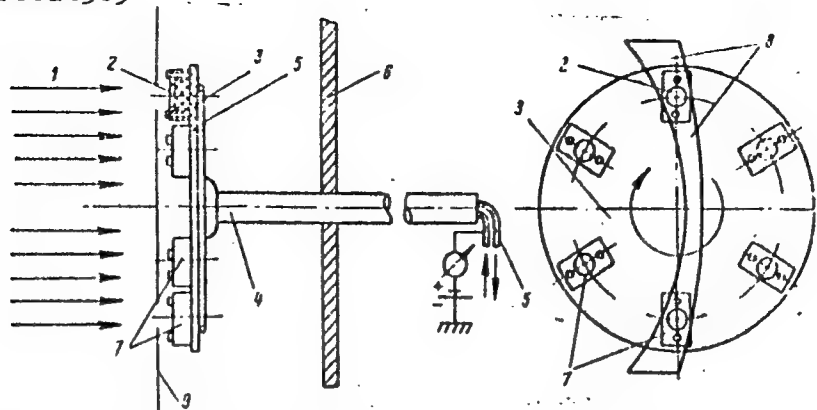


Fig. 1. Apparatus for the investigation of pulverization. 1 -- Directed motion of bombarding ions, 2 -- samples, 3 -- copper rotating disc, 4 -- rod, 5 -- water-cooling pipes, 6 -- vacuum chamber wall, 7 -- sample holders, 8 -- ion beam track, 9 -- stationary diaphragm.

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2/3

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these substances, relative to copper, are listed in the table. The authors thank L. A. Artsimovich, I. N. Golovin, and G. Ya. Shchepkin for interest and help and G. N. Aretov, V. Z. Bychkov, and A. K. Terent'yev for design of the experimental apparatus. Orig. art. has: 1 figure and 1 table.

SUB CODE: 20/ SUBM DATE: 09Nov65/ ORIG REF: 010/ OTH REF: 005

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3/3 (C)

TEL'KSNIS, L. A.

AUTHORS: Leonov, Yu. P., Tel'ksnis, L. A., (Moscow) 103-11-4/10

TITLE: The Evaluation of Parameters of the Law of Distribution of a Random Function in the Case of Limited A Priori Data (Otsenka parametrov zakona raspredeleniya sluchaynoy funktsii pri ogranichennykh apriornykh dannykh).

PERIODICAL: Avtomatika i Telemekhanika, 1957, Vol. 18, Nr 11, pp. 985-998 (USSR)

ABSTRACT: A method is described by means of which it is possible to carry out parameter evaluations of the distribution-law of a random function in the case of limited a priori data with respect to the function. It is shown that a decrease of a priori data in comparison to the parameters to be evaluated may be obtained if it is possible to control the correctness of the hypotheses set up for these parameters. One of the possible methods is investigated, and a scheme by means of which the correctness of the hypotheses set up can be checked, is given. There are 1 table, 6 figures, and 2 Slavic references.

SUBMITTED: May 15, 1957.

AVAILABLE: Library of Congress  
Card 1/1

TEIKSNIS, L.A. [Telksnys, L.]

Breaking random functions into a canonical series with the application of modulated electronic installations. Liet ak darbai B no.4: 147-159 '59 (EEAI 9:3)

1. Institut energetiki i elektrotechniki AN Litovskoy SSR.  
(Probabilities) (Automatic control)

TEL'KSNIS, L. A., Cand Tech Sci -- (diss) "Statistical analysis of systems of automatic control with the application of electronic modelling devices." Moscow, 1960. 11 pp; (Inst of Automatics and Telemechanics of the Academy of Sciences USSR); 150 copies; price not given; price not given; bibliography on pp 10-11; (KL, 18-60, 153)

[illegible]



16.4000(1013,1132,1329)

27363  
S/194/61/000/003/024/046  
D201/D306

AUTHOR: Tel'ksnis, L.A.

TITLE: Statistical analysis of automatic control systems  
by means of electronic modelling

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika,  
no. 3, 1961, 37, abstract 3 V301D (Avtoref. diss. K  
and tekhn. n., In-ta avtomatiki i telemekhan AN  
SSSR, M., 1960)

TEXT: A method is proposed of statistical analysis of automatic  
control systems (CAY (SAU)) which simplifies the problem of deter-  
mining the second order moments of different coordinates of the  
stationary and non-stationary linear automatic control systems  
which can be statistically analyzed. The method is based on the  
use of finite sections of the series of canonical representation  
of random functions. A continuous operation and discrete operation  
computing device (BY (VU)) is described which enables an automatic

Card 1/2

27363

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D201/D306

Statistical analysis...

evaluation of the basic part of calculations, when obtaining canonical representation of random functions and when evaluating the second order moments of different coordinates of the automatic control systems. It is shown that these devices may be used to determine statistically the transfer coefficients of linearized elements of automatic control. Calculations and experimental homograms are given for determining the accuracy of representation of a random function by a finite section of the canonical series. The parameters are analyzed. 11 references. [Abstracter's note: Complete translation]

Card 2/2

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S/194/61/000/002/022/039  
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AUTHORS: Kovarskiy, G.Ya. and Tel'ksnis, L.A.

TITLE: The evaluation of accuracy with which a random function can be separated by a finite part of a canonical series

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 2, 1961, 35, abstract 2 V271 (V sb. Avtomat, upravleniye, M., AN SSSR, 1960, 307-311)

TEXT: A finite part of a canonical series is used to evaluate the accuracy of dispersion of the output coordinate of any linear system of automatic control under the influence of either a stationary or a non-stationary random disturbance. A nomogram is given which permits the initial evaluation of the number of terms of canonical distribution of random disturbance which would secure a pre-determined accuracy (in the terms of average dispersion of the final term) of representation of the random function. 1 bloc-dia- ✓  
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Card 1/2

The evaluation of accuracy...

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gram of the calculating arrangement is given as used for determining the dispersion of a sharply cut-off random disturbance.  
3 references.

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Card 2/2

TEL'KSNIS, L.A. (Moskva)

Representation of a random stationary function using linear combinations  
of random magnitudes. Izv. AN SSSR. Otd. tekhn. nauk. Energ. i avtom.  
no. 4:163-166 J1-Ag '60. (MIRA 13:8)  
(Automatic control) (Fourier's series)

TEL'KSNIS, L.A. (Vil'nyus)

Determination of second order moments of various coordinates  
of automatic control systems by the use of analog computers.  
Avtom.i telem. 21 no.2:220-223 F '60. (MIRA 13:5)  
(Electronic analog computers) (Automatic control)

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207/10,000-2-7/14

AUTHOR: Tel'khanis, L. A.

TITLE: Determination of Moments of the Second Order of Various Coordinates of Automatic Control Systems Using Electronic Modeling Arrangements. Reported at the 1959 All-Union Conference in Moscow on Computational Mathematics And Techniques

PERIODICAL: Avtomatika i telemekhanika, 1960, Vol 22, Nr 2, pp 220-223 (USSR)

ABSTRACT: The paper suggests an engineering method for computing moments of the second order of various coordinates of automatic control systems (ACS). The method uses canonical representation of random functions as

$$X(t) = \sum_{n=1}^{\infty} V_n x_n(t), \quad (1)$$

Card 1/6

Determination of Moments of the Second Order  
of Various Coordinates of Automatic Control  
Systems Using Electronic Modeling Arrangements.

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where  $V_{ij}$  are random mutually noncorrelated coefficients  
of canonical resolution and  $\lambda_{ij}(t)$  are nonrandom  
coordinate functions of canonical resolution. Intro-  
ducing the concept of normalized coordinate function

$$\dot{x}_i(t) = D_{ij}^{-\frac{1}{2}} x_i(t) \quad (2)$$

where  $D_{ij}$  is the variance of  $V_{ij}$ , the following  
expressions may be obtained for the second order  
moments: (a) for the output variance

$$D_y(t) = \sum_{i=1}^{\infty} y_i^2(t) \quad (3)$$

card 2/6

(b) for the output correlation function



Determination of Moments of the Second Order  
of Various Coordinates of Automatic Control  
Systems Using Electron Modeling Arrangements.

7/527  
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$$K_v(t, \tau) = \sum_{v=1}^{\infty} y_v^*(t) y_v^*(\tau). \quad (4)$$

(c) for the mutual correlation function of the input  
and output variables at a given time

$$D_{xy}(t) = \sum_{v=1}^{\infty} x_v^*(t) y_v^*(t); \quad (5)$$

(d) for the mutual correlation function of the input  
and output variables

$$K_{xy}(t, \tau) = \sum_{v=1}^{\infty} x_v^*(t) y_v^*(\tau). \quad (6)$$

Here  $y_v^*(t)$  is the solution of the differential equation

Card 3/6

Determination of Moments of the Second Order  
of Various Coordinates of Automatic Control  
Systems Using Electron Modeling Arrangements.

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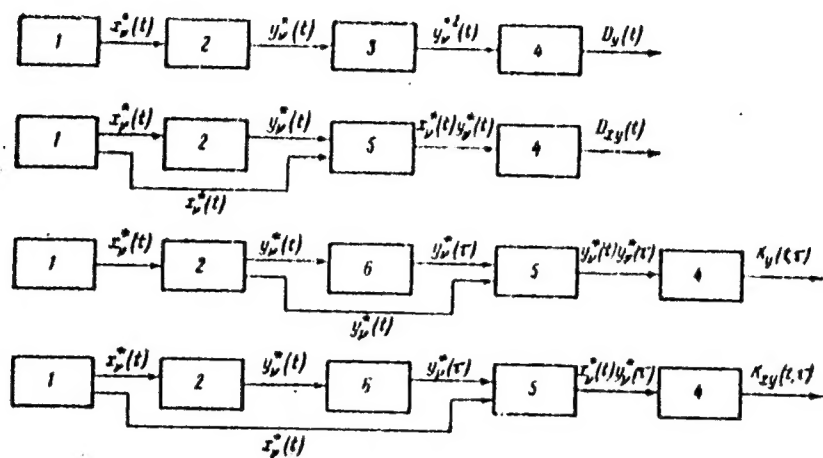
$$L(p, t) y_v^*(t) = M(p, t) x_v^*(t) \quad (v = 1, 2, \dots), \quad (7)$$

and the expressions  $L(p, t) = \sum_{i=0}^n a_i p^i$ ,  $M(p, t) = \sum_{j=0}^m b_j p^j$ ,  $p \equiv \frac{d}{dt}$ ,  $m < n$ ,

are operators of the differential equation describing the analyzed ACS. Equations (3) to (6) are suitable for computation using the noncomplex specialized electronic computer shown in block diagram in Fig. 1.

Card 4/6

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Card 5/6

Fig. 1.

Determination of Moments of the Second Order  
of Various Coordinates of Automatic Control  
Systems Using Electron Modeling Arrangements.

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SOV/103-22-2-7/14

Here, 1 is the memory and programing block; 2 is the electronic model of the investigated ACS; 3 is a square producing device; 4 is a specialized summation device; 5 is a multiplying device; 6 is a time-delay-introducing device. The differential Eq. (7) is solved using the electronic model of the investigated ACS. It is stated that in comparison with the known methods of statistical analysis, the above method saves work and equipment. There are 3 figures; and 6 references, 5 Soviet, 1 U.S. The U.S. reference is the Russian translation of Random Processes in Automatic Control, by J. H. Laning, Jr., and R. G. Battin.

SUBMITTED: September 29, 1959

Card 6/6